

WHAT IS CLAIMED IS:

1. A light-emitting device comprising:

a light-emitting diode;

5 a portion, formed on a plane substantially parallel to a light-emitting surface of said light-emitting diode, having a dielectric constant periodically modulated with respect to the in-plane direction of said plane substantially parallel to said light-emitting surface; and

10 a member provided on the side of said light-emitting surface of said light-emitting diode for diffusing light emitted from said light-emitting diode.

2. The light-emitting device according to claim 1,

15 wherein

said portion having said periodically modulated dielectric constant is constituted by periodically arranging materials having different dielectric constants.

20 3. The light-emitting device according to claim 1,

wherein

said portion having said periodically modulated dielectric constant consists of a photonic crystal.

25 4. The light-emitting device according to claim 1,

wherein

said member diffusing emitted said light is
conductive..

5 5. The light-emitting device according to claim 4,
wherein

said conductive member diffusing said emitted light
is formed to be in contact with a portion of said light-
emitting diode provided on the light-emitting side.

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6. The light-emitting device according to claim 4,
wherein

said conductive member diffusing said emitted light
consists of at least one material selected from a group
15 consisting of n-type SiC, n-type AlN and p-type diamond.

7. The light-emitting device according to claim 1,
wherein

said member diffusing emitted said light includes a
20 lens.

8. The light-emitting device according to claim 7,
wherein

said member diffusing said emitted light includes a
25 concave lens.

9. The light-emitting device according to claim 8,
wherein

said concave lens includes a plano-concave lens
5 having a flat first surface and a concave second surface.

10. The light-emitting device according to claim 1,
wherein

said member diffusing emitted said light includes a
10 convex mirror.

11. The light-emitting device according to claim 1,
wherein

said member diffusing emitted said light includes a
15 translucent member dispersively containing a light
diffusing agent consisting of substantially transparent
particulates.

12. The light-emitting device according to claim 1,
20 wherein

said member diffusing emitted said light includes a
translucent member having fine corrugation at least either
on the front surface or on the back surface.

25 13. The light-emitting device according to claim 12,

wherein

the interval between adjacent projecting portions in said fine corrugation is at least about 200 nm and not more than about 2000 nm.

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14. The light-emitting device according to claim 12, wherein

the interval between adjacent projecting portions in said fine corrugation is at least about 2 μm and not more than about 100 μm .

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15. The light-emitting device according to claim 1, further comprising a fluorescent body provided between said light-emitting surface and said member diffusing emitted said light.

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16. The light-emitting device according to claim 1, wherein

said light-emitting diode includes an emission layer,

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and

said emission layer consists of a nitride-based semiconductor.

17. The light-emitting device according to claim 1, wherein

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a plurality of said light-emitting diodes are arranged in the form of a matrix in plane.

18. The light-emitting device according to claim 17,
5 wherein

said member diffusing emitted said light includes a lens, and

a plurality of said lenses are arranged in the form of a matrix in plane.

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19. A light-emitting device comprising:

a light-emitting diode;

a portion, formed on a plane substantially parallel to a light-emitting surface of said light-emitting diode,
15 having a dielectric constant periodically modulated with respect to the in-plane direction of said plane substantially parallel to said light-emitting surface; and

means provided on the side of said light-emitting surface of said light-emitting diode for diffusing light
20 emitted from said light-emitting diode.

20. An illuminator comprising a light-emitting device including:

a light-emitting diode;

25 a portion, formed on a plane substantially parallel

to a light-emitting surface of said light-emitting diode,
having a dielectric constant periodically modulated with
respect to the in-plane direction of said plane
substantially parallel to said light-emitting surface; and

5 a member provided on the side of said light-emitting
surface of said light-emitting diode for diffusing light
emitted from said light-emitting diode.

21. The illuminator according to claim 20, further
10 comprising a fluorescent body arranged at a prescribed
interval from said light-emitting device for converting
light emitted from said light-emitting device to white
light.

15 22. The illuminator according to claim 21, wherein
said fluorescent body is formed by mixing fluorescent
materials having a plurality of colors with each other.

23. The illuminator according to claim 20, wherein
20 a plurality of said light-emitting diodes
constituting said light-emitting device are arranged in
the form of a matrix in plane.

24. The illuminator according to claim 23, wherein
25 said member diffusing emitted said light includes a

lens, and

a plurality of said lenses are arranged in the form of a matrix in plane.